

Claims

1. Base station comprising:

a transmission/reception device for communicating with a mobile unit using one hopping sequence from a set of hopping sequences,

5        where the hopping sequence is made up of a defined temporal sequence of transmission/reception frequencies,

where in one hopping sequence each transmission/reception frequency is followed by a defined successor transmission/reception frequency, and

10        where each of the set of hopping sequences differs from the other hopping sequences, and

an identification device for the identification of the hopping sequence used for communication from the set of hopping sequences so that the base station has exactly one hopping sequence allocated.

15        2. Base station according to claim 1 for which the transmission/reception device is constructed in such a way that it can generate each of the set of hopping sequences, so that one hopping sequence can include all transmission/reception frequencies within a fixed frequency band.

3. Base station according to claim 2,

20        where the defined frequency band is one of the ISM bands whose utilisation is specified by national regulations.

4. Base station according claim 1,

25        where the transmission/reception device is constructed using an OSI layer model with the transmission/reception device constructed in such a way that it can work as the substructure for the data link layer and the network layer according to the DECT standard.

5. Base station according to claim 1,

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where the identification device includes an identification number of the base station.

6. Base station according to claim 1,

where the identification device includes the RFPI number according to the DECT standard

7. Base station according to claim 1, where the identification device is designed in such a way that it can allocate a defined hopping phase to the base station where the hopping phase defines by how much the hopping sequence used for communication by the transmission/reception device is temporarily offset from the same hopping sequence used by a different radio cell of the base station in a synchronous network.

8. Base station according to claim 1,

which is constructed in such a way that it can generate the hopping sequence used for communication by the transmission/reception device itself using a stored basic hopping sequence and the identification device.

9. Mobile unit comprising:

a transmission/reception unit for communication with a base station using one hopping sequence from a set of hopping sequences with one hopping sequence being a defined temporal sequence of transmission/reception frequencies different from all the others in the set of hopping sequences;

a storage facility for storing information about the specific hopping sequence that is to be used for communication with one particular base station, so that the mobile unit can use the stored information for communicating with a particular base station pre-defined by the specific hopping sequence; and

a synchronisation device for determining whether the base station in a particular radio cell is transmitting, with the synchronisation device constructed in such a way that after receiving a set of valid data it can find out using the stored information, whether these are arriving in the specific hopping sequence, and when this specific hopping sequence is being used, will activate the



transmission/reception device without the need for the synchronisation unit to send synchronisation data to the base station to query the base station about the hopping sequence it uses.

10. Mobile unit according to claim 9,

5 where the memory device is constructed in such a way that during registration before commissioning it can receive information from the base station

11. Mobile unit according to claim 10,

where the stored information includes the RFPI number of the base station in accordance with the DECT standard, where the RFPI number includes an RPN number and an FPN number.

12. Mobile unit according to claim 9,

constructed in such a way that using a basic hopping sequence and the information store in the memory device, the hopping sequence to be used for communication by the transmission/reception device can be generated by itself.

13. Communication network comprising:

a base station having

a transmission/reception device for communicating with a mobile unit using one hopping sequence from a set of hopping sequences, where the hopping sequence is made up of a defined temporal sequence of transmission/reception frequencies, where in one hopping sequence each transmission/reception frequency is followed by a defined successor transmission/reception frequency, and where each of the set of hopping sequences differs for the other hopping sequences, and

an identification device for the identification of the hopping sequence used for communication from the set of hopping sequences so that the base station has exactly one hopping sequence allocated.; and

a mobile unit having:

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a transmission/reception unit for communication with a base station using one hopping sequence from a set of hopping sequences with one hopping sequence being a defined temporal sequence of transmission/reception frequencies different from all the others in the set of hopping sequences;

5 a storage facility for storing information about the specific hopping sequence that is to be used for communication with one particular base station, so that the mobile unit can use the stored information for communicating with a particular base station pre-defined by the specific hopping sequence; and

10 a synchronisation device for determining whether the base station in a particular radio cell is transmitting, with the synchronisation device constructed in such a way that after receiving a set of valid data it can find out using the stored information, whether these are arriving in the specific hopping sequence, and when this specific hopping sequence is being used, will activate the transmission/reception device without the need for the synchronisation unit  
15 to send synchronisation data to the base station to query the base station about the hopping sequence it uses.

14. Communication network according to claim 13,

which is constructed as a synchronous network, and

20 for each of a number of radio cells one base station is to be installed with each base station constructed in such a way that it communicates using the same hopping sequence and with the hopping sequence of each base station being different.

15. Communication network according to claim 13,

which is constructed as an asynchronous network, and

25 where several base stations operate inside a single radio cell with each base station utilising its own hopping sequence and each mobile unit being designed to operate using only a single hopping sequence with that base station which uses that hopping sequence.

16. Method for operating a base station comprising the following steps:

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communicating with a mobile unit using one hopping sequence from a set of hopping sequences, with a hopping sequence being a precisely defined temporal sequence of transmission/reception frequencies, where for each hopping sequence, each transmission/reception frequency has its own precisely defined successor transmission/reception frequency and where each of the set of hopping sequences is different from the other hopping frequencies; and

identifying the hopping frequencies used for communication so that each hopping sequence can be precisely correlated with one base station.

17. Method for operating a mobile unit comprising the following steps:

communicating with the base station using one hopping sequence from a set of hopping sequences with a hopping sequence being a precisely defined temporal sequence of transmission/reception frequencies, where for each hopping sequence each transmission/reception frequency has its own precisely defined successor transmission/reception frequency and where each of the set of hopping sequences is different from the other hopping frequencies;

storing information about the specific hopping sequence to be used for communication with one particular base station, so that the mobile unit using the stored information for communication with one particular base station using that particular hopping sequence is pre-determined; and

determining whether in one radio cell that particular base station is transmitting, where the synchronisation device is designed in such a way that by using the stored information and receiving several valid data it can find out if they are arriving in conformity with that particular hopping sequence, and when this particular hopping sequence is detected, will activate the transmission/reception device without the synchronisation device needing to send signalled information to a base station to query that base station about the hopping sequence it uses.

18. Method for operating a communication network comprising the following steps:

operating a base station by a method having the following steps:

communicating with a mobile unit using one hopping sequence from a set of hopping sequences, with a hopping sequence being a precisely defined

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temporal sequence of transmission/reception frequencies, where for each hopping sequence, each transmission/reception frequency has its own precisely defined successor transmission/reception frequency and where each of the set of hopping sequences is different from the other hopping frequencies; and

identifying the hopping frequencies used for communication so that each hopping sequence can be precisely correlated with one base station; and

operating a mobile unit by a method having the following steps:

communicating with the base station using one hopping sequence from a set of hopping sequences with a hopping sequence being a precisely defined temporal sequence of transmission/reception frequencies, where for each hopping sequence each transmission/reception frequency has its own precisely defined successor transmission/reception frequency and where each of the set of hopping sequences is different from the other hopping frequencies;

storing information about the specific hopping sequence to be used for communication with one particular base station, so that the mobile unit using the stored information for communication with one particular base station using that particular hopping sequence is pre-determined; and

determining whether in one radio cell that particular base station is transmitting, where the synchronisation device is designed in such a way that by using the stored information and receiving several valid data it can find out if they are arriving in conformity with that particular hopping sequence, and when this particular hopping sequence is detected, will activate the transmission/reception device without the synchronisation device needing to send signalled information to a base station to query that base station about the hopping sequence it uses.

19. Method for registering a mobile unit having a transmission/reception unit for communication with a base station using one hopping sequence from a set of hopping sequences with one hopping sequence being a defined temporal sequence of transmission/reception frequencies different from all the others in



the set of hopping sequences; a storage facility for storing information about the specific hopping sequence that is to be used for communication with one particular base station, so that the mobile unit can use the stored information for communicating with a particular base station pre-defined by the specific hopping sequence; and a synchronisation device for determining whether the base station in a particular radio cell is transmitting, with the synchronisation device constructed in such a way that after receiving a set of valid data it can find out using the stored information, whether these are arriving in the specific hopping sequence, and when this specific hopping sequence is being used, will activate the transmission/reception device without the need for the synchronisation unit to send synchronisation data to the base station to query the base station about the hopping sequence it uses, with a base station having a transmission/reception device for communicating with a mobile unit using one hopping sequence from a set of hopping sequences, where the hopping sequence is made up of a defined temporal sequence of transmission/reception frequencies, where in one hopping sequence each transmission/reception frequency is followed by a defined successor transmission/reception frequency, and where each of the set of hopping sequences differs for the other hopping sequences, and an identification device for the identification of the hopping sequence used for communication from the set of hopping sequences so that the base station has exactly one hopping sequence allocated, comprising the following steps:

activating the registration mode for the base station;

communicating information about the identity of the base station to the mobile unit using a predefined registration hopping sequence which is known to both the mobile unit and the base station; and

storing the information about the identity of the base station in the mobile unit so that the mobile unit is prepared to communicate using the hopping sequence allocated to the base station.